REMARKS

This is intended to be a complete response to the Official Action mailed November 24, 2008 in which claims 1, 2 and 6-25 are rejected. Applicants have amended claims 1, 2, 6-8, 11-14 and 16-25 herein. New dependent claims 26-28 have been added herein. Claims 1, 2, 6-24, and 26-28 are now pending in this application.

The applicants have amended independent claims 1 and 16 of the present application to clarify specific aspects of the claimed invention. Accordingly, no equivalents have been surrendered by these amendments as these amendments are for clarification purposes only and are not in response to the Examiner's rejection. Support for the amendments may be found at least in, for example, Figure 1, Figure 3 and paragraphs [0019]-[0021] and [0027] of the Specification as originally filed. Applicants respectfully submit that no new matter has been added.

The Applicants have also amended claims 1, 2, 6-8, 11-14 and 16-25 to produce proper antecedent relationship and to correct minor typographical errors.

New dependent claims 26-28 have also been added. Support for new claims 26-27 may be found at least in, for example, Figure 3 and paragraphs [0027] of the Specification as originally filed. Support for new claim 28 may be found at least in, for example, Figure 1 and paragraph [0021] of the

Specification as originally filed. Thus, Applicants respectfully submit that no new matter has been added to the currently pending application.

Applicants' Response to the 35 U.S.C. § 103(a) Rejection

In the Office Action, the Examiner rejected claims 1, 2 and 6-25 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 5,958,106 issued to Armstrong et al. (hereinafter referred to as "Armstrong") in view of U.S. Patent 2,846,303 issued to Keller et al. (hereinafter referred to as "Keller"). Applicants respectfully traverse the rejection for the reasons stated herein below.

Regarding claim 1: The present invention as defined by amended independent claim 1, is directed to a method of separating metal particulates from a slurry consisting essentially of liquid reducing metal, metal particulates and salt particulates, comprising the steps of passing a separately prepared liquid reducing metal or a separately prepared liquid salt through a concentrated slurry to further concentrate the metal particulates, wherein the separately prepared liquid reducing metal or the separately prepared liquid salt dissolves or displaces the salt particulates and the liquid reducing metal in the concentrated slurry. The separately prepared liquid reducing metal or the separately prepared liquid salt is used to dissolve or displace the other unwanted constituent (salt or liquid reducing metal) in the slurry (see the present application, paragraphs [0005] and [0027] (last sentence)).

Armstrong discloses two separate options for separation of titanium and sodium chloride. The first option is to remove liquid sodium chloride and liquid sodium from the solid titanium by controlling the temperature above the melting point of sodium chloride (see Armstrong, column 4, lines 24-33). The second option is to remove liquid sodium first from solid titanium and solid sodium chloride by controlling the temperature below the melting point of sodium chloride, then remove the solid sodium chloride from the solid titanium in a water-alcohol wash (see Armstrong, column 4, lines 34-42). Armstrong discloses that a filter can be used to separate the liquid sodium from the solid titanium and the solid sodium chloride in the second option (see Armstrong, column 7, lines 16-23).

Keller discloses that liquid sodium chloride can be removed from the solid titanium by simple filtration or decantation when the temperature is controlled at above the melting point of sodium chloride (see Keller, column 2, lines 13-16 and 31-35).

Neither Armstrong nor Keller teaches or even suggests the use of a separately prepared liquid reducing metal or a separately prepared liquid salt to dissolve or displace the liquid metal or salt in the slurry. When the slurry undergoes filtration or decantation, a gel or gel-like material may form (see the present application, paragraph [0002]). Therefore, the remaining liquid reducing metal or salt in the gel or gel-like material can not be completely removed by simple filtration or decantation as taught by Armstrong and

Keller. Armstrong and Keller disclose a water-alcohol wash (*see* Armstrong, column 4, lines 40-42) and an aqueous acid leaching bath (*see* Keller, column 5, lines 4-7) to remove the remaining salt. Keller teaches, however, that the leaching of the salt prevents the salt from being recycled (*see* Keller, column 2, lines 33-38). As such, the use of a water-alcohol wash or aqueous acid leaching bath causes a significant amount of the salt to be permanently lost, thereby adding additional expense to the production of titanium. In addition, neither Armstrong nor Keller addresses the remaining liquid reducing metal in the filtered or decanted slurry. Therefore, compared to Armstrong and Keller, the use of a separately prepared liquid reducing metal or a separately prepared liquid salt to displace or dissolve the other unwanted constituent (i.e., the salt or liquid reducing metal) in the slurry as defined by Applicants' independent claim 1, as amended, is a novel element/step not disclosed in either cited reference.

Since Armstrong and Keller, either individually or in combination, do not teach or suggest all the limitations of independent claim 1, as amended, Applicants respectfully traverse the obviousness rejection under 35 U.S.C. § 103(a). See *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974) (emphasis added) (to establish *prima facie obviousness* of a claimed invention, *all the claim features* must be taught or suggested by the prior art). Indeed, as the Board of Patent Appeal and Interferences has recently confirmed, a proper obviousness determination requires that an Examiner

make "a searching comparison of the claimed invention – *including all its limitations* – with the teaching of the prior art." See *In re Wada and Murphy*, Appeal 2007-3733, citing *In re Ochiai*, 71 F.3d 1565, 1572 (Fed. Cir. 1995).

With respect to independent claim 1, the Examiner states:

> Throughout Armstrong, sodium metal is used as a heat exchanger fluid and means to shuttle reactants and products. Reintroduction of decanted sodium is an obvious step in view of the use of sodium . . . . Furthermore, Armstrong teaches that the reducing agent, sodium, should be recycled . . . . (Office Action mailed November 24, 2008, Page 5 and Page 9).

Applicants respectfully traverse the statement that reintroduction of decanted sodium is an obvious step in view of the disclosure of Armstrong. Armstrong only discloses that sodium should be recycled to the reactor (*see* Armstrong, figure 1 (sodium path), figure 4, and column 7, lines 22-23). Armstrong does not teach or suggest recycling sodium to dissolve or displace the salt in the slurry.

For the reasons stated hereinabove, Applicants respectfully submit that the present invention as defined in amended independent claim 1, as amended, is not obvious in view of Armstrong and Keller.

Regarding claim 16: The present invention as defined by amended independent claim 16 is directed to a method of separating metal particulates from a slurry consisting essentially of liquid reducing metal, the metal particulates and salt particulates, comprising introducing the slurry

into a vessel having a separately prepared liquid salt therein, the constituents of the slurry and of the separately prepared liquid salt form layers due to density differences between the liquid reducing metal and the metal particulates, wherein the concentration of the metal particulates is increased at the bottom of the vessel, removing the liquid reducing metal from the vessel, separating the concentrated metal particulates along a portion of the liquid salt from the vessel, filtering the withdrawn portion of the liquid salt from the separated and concentrated metal particulates, and cooling and water washing the remaining liquid salt from the separated and concentrated metal particulates. The separately prepared liquid salt in the vessel is used to assist separation of the liquid reducing metal and the salt and metal particulates by way of density difference (see the present application, paragraphs [0022]).

Discussion of Armstrong and Keller can be found in the previous section, and, for reasons of succinctness, will not be repeated here.

In Armstrong, Applicants fail to find any teaching or suggestion of using a separately prepared liquid salt to assist separation of the liquid reducing metal and the salt and metal particulates by way of density difference. Keller discloses that **liquid** sodium chloride can be removed from the **solid** titanium by decantation when the temperature is controlled at above the melting point of sodium chloride (*see* Keller, column 2, lines 31-35). However, Keller does not teach: 1) that the decantation is

between two liquid components, i.e., the liquid reducing metal, and the liquid salt; and 2) that a separately prepared liquid salt is added to the vessel in addition to the by-product salt produced from the reaction. Therefore, compared to Armstrong and Keller, the use of a separately prepared liquid salt to assist in the separation of the liquid reducing metal, the salt particulates and the metal particulates by way of density difference, as defined by Applicants' independent claim 16, as amended, is a novel element/step not disclosed in either cited reference.

Since Armstrong and Keller, either individually or in combination, do not teach or even suggest all of the limitations of independent claim 16, as amended, Applicants respectfully traverse the obviousness rejection under 35 U.S.C. § 103(a). See *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974) (emphasis added) (to establish *prima facie obviousness* of a claimed invention, *all the claim features* must be taught or suggested by the prior art). Indeed, as the Board of Patent Appeal and Interferences has recently confirmed, a proper obviousness determination requires that an Examiner make "a searching comparison of the claimed invention – *including all its limitations* – with the teaching of the prior art." See *In re Wada and Murphy*, Appeal 2007-3733, citing *In re Ochiai*, 71 F.3d 1565, 1572 (Fed. Cir. 1995).

With respect to independent claim 16, the Examiner states:

> As for the molten salt being separately prepared, it would have been obvious to one of the ordinary skill to separately prepare molten salt as Armstrong conducts separation in a separate vessel and producing molten salt such as molten NaCl would be simpler than trying to separate NaCl from the existing process stream containing titanium. (Office Action mailed November 24, 2008, Page 6 and Page 10).

Applicants respectfully point out that one of the many differences between independent claim 16, as amended, and the cited references resides not in whether the liquid salt is separately prepared or not, but in whether a separately prepared liquid salt is used or not. Neither Armstrong nor Keller teaches or even suggests the use of a separately prepared liquid salt to assist in the separation of the liquid reducing metal and the salt and metal particulates.

For at least the reasons stated hereinabove, Applicants respectfully submit that the present invention as defined in amended independent claim 16 is not obvious in view of Armstrong and Keller.

In the Office Action mailed November 24, 2008, the Examiner further states:

> Applicant asserts (p. 7, para 1) that the process of the '303 patent Keller differ significantly from the process of the present claims because the process involves molten salt.
>
> In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually

> where the rejections are based on combination of references . . . Keller is mainly used to demonstrate the desirability of the process of decantation to separate one or more undesired liquids or a liquid phase to concentrate the desired metal particulates." (Page 8, last two paragraphs).

Applicants respectfully point out that a new set of arguments are presented in this response in which the role of Keller is not questioned, but rather the Examiner's assertions with regard to Keller's disclosure is questioned. Applicants respectfully submit that Keller does not disclose the use of a separately prepared liquid reducing metal or a separately prepared liquid salt to displace or dissolve the other unwanted constituent in the slurry as defined by Applicants' independent claim 1, as amended, or the use of a separately prepared liquid salt to assist separation of the liquid reducing metal and the salt and metal particulates by way of density difference as defined by Applicants' independent claim 16, as amended. In addition, Applicants further submit that these novel elements/steps are also not disclosed in Armstrong. Therefore, the failure of the combination of Armstrong and Keller to teach or suggest each and every feature of the independent claims, as amended, of the currently pending application remains fatal to an obviousness rejection under 35 U.S.C. § 103.

Regarding dependent claims 2, 6-15 and 17-25: Applicants respectfully submit that dependent claims 2, 6-15 and 17-25 are not obvious in view of Armstrong and Keller since independent claim 1, as amended, and

claim 16, as amended, from which these claims depend, are not obvious in view of Armstrong and Keller.

Therefore, it is respectfully submitted that claims 1, 2 and 6-24 are patentably distinguished over the cited prior art. Applicants respectfully request the Examiner to reconsider and withdraw the rejection of claims 1, 2 and 6-24 under 35 U.S.C. § 103(a).

CONCLUSION

This is meant to be a complete response to the Office Action mailed November 24, 2008. Applicants respectfully submit that each and every rejection of the claims has been overcome. Further, Applicants respectfully submit that all pending claims are now in a condition for allowance and request issuance of a Notice of Allowance thereof.

Should the Examiner have any questions regarding this Amendment, or the Remarks contained therein, Applicants' representative would welcome the opportunity to discuss the same with the Examiner.

Respectfully submitted,

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